MEMORANDUM

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

To: File #64585.157

Date: 9/30/05

From: Kristina Gross/Patrick N. McGuire

cc: Keith Krawczyk, MDEQ
Kenneth Callahan, BBL
Dawn Penniman, BBL
Shari Kolak, USEPA

Re: Former Hawthorne Mill Supplemental Soil Investigation Activities Summary

Soil investigation activities conducted at the Former Hawthorne Mill property – associated with the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (Superfund Site) – on April 7, 2005, are summarized below. Activities were conducted pursuant to agreements reached during a February 8, 2005 meeting with the Kalamazoo River Study Group (KRSG), Michigan Department of Environmental Quality (MDEQ), and United States Environmental Protection Agency (USEPA). These investigative activities are a continuation of activities conducted during the Property Divestiture Study in 2002 (*Georgia-Pacific Corporation Kalamazoo Paper Mill Property Divestiture Study – Supporting Materials* [Blasland, Bouck & Lee, Inc. (BBL), 2003]). Individuals present during the investigation included representatives from BBL (Patrick N. McGuire and Kristina Gross), Georgia-Pacific Corporation (Georgia-Pacific; Paul Montney, P.E.), Terra Contracting, LLC (Terra Contracting; Doug Adair), and the MDEQ (Keith Krawczyk).

A total of six test pits were excavated at the Former Hawthorne Mill property, in the vicinity of the former mill and clarifier (see Figure 1 for test pit locations). Three of the test pits, TP-7, TP-8, and TP-9, were excavated to 6 feet below ground surface (bgs), with discrete samples collected at intervals of 2, 4, and 6 feet bgs. The stratigraphy at TP-7 was similar to that observed at TP-8, marked by the presence of a concrete slab at the surface followed by fill which included slag and cinders within the near surface, and red brick at approximately 5 feet bgs followed by dark gray silt with brown and orange mottling at 5.5 feet bgs. Test pits TP-9 and TP-13 were excavated east of the Former Hawthorne Mill building. TP-9 was excavated adjacent to the former clarifier and straddling an apparent concrete-block lined drainage ditch. Located adjacent to the previously constructed TP-6, the TP-13 series was comprised of three test pits oriented in an east-west "fan"-like formation, originating at a common point and spreading outward from each other from west to east, achieving a maximum distance apart, between each test pit, of approximately 5 feet at the most easterly point. The TP-13 series was excavated to a depth of 2.5 feet bgs. At locations TP-9 and TP-13, the soils from ground surface to approximately 1 foot bgs were a mix of silt and fine sand, organics (detritus and roots), and fill materials including cinders, ash, and slag. From approximately 1 to 6 feet bgs, grayish-brown fine sand with small shells were observed. No odors, staining, or nonaqueous phase liquids (NAPLs) were observed at TP-7, TP-8, TP-9, or TP-13. Test pit logs for all locations are included as Attachment A. Attachment B provides a photo log depicting the test pit excavations.

Additionally, three test pits (WC-1, WC-2, and WC-3; see Figure 1) were excavated within the Oxbow Area to collect soil samples for additional characterization of the soil/residuals that would

potentially be consolidated at the A-Site. WC-1 and WC-2 were excavated to approximately 2 to 2.5 feet bgs and WC-3 was excavated to 3.7 feet. For all three, samples were collected from a layer of paper residual at approximately 0.25 to 1 foot bgs. Approximately 25 feet east of WC-2, a 4 inch steel pipe was observed running NW-SE, toward the channel and into the Oxbow Area (see Figure 1). A sample of material from within the pipe was collected at a break in the pipe, approximately 30 feet east of WC-2 (sample designated as Waste Outfall 1). The photo log in Attachment B provides photographs of the 4 inch steel pipe. The general stratigraphy observed at the "WC" series of test pits was marked by organic matter at the surface and brown silt and sand, followed by brownish-orange fine sand. Test pit logs for all locations are included as Attachment A.

Five surface samples were collected relative to the oxbow – two north of the oxbow (NS-1 and NS-2), and three south of the oxbow (SS-1, SS-2, and SS-3); see Figure 1 for sample locations. Prior to collecting these samples, the north and south areas were probed using a shovel to determine if paper residuals were present; probing locations focused on low lying areas – expecting that residuals would flow and deposit based on local topography. Paper residuals were not observed, however, the samples collected in the area south of the channel focused on highly organic soil within several low lying areas and the samples collected from the area north of the channel focused on locations where cinders were present.

All samples were sent to Severn Trent Laboratories, Inc. (STL) in Burlington, Vermont, for either analyses of TCL/TAL analytes or PCB only. See Table 1 for a summary of samples and analyses, see Table 2 for details on analytical results.

Attachment

KWC/kmg

Tables

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TABLE 1
SUPPLEMENT SOIL INVESTIGATION SAMPLING INFORMATION

GEORGIA-PACIFIC CORPORATION
FORMER HAWTHORNE MILL PROPERTY
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
KALAMAZOO, MICHIGAN

Date Collected	Media	Sample ID	Analysis		
			TCL/TAL Pesticides, PCBs, SVOCs, Metals	TCL VOCs	PCBs
4/7/2005	Soil	WC-1	X	X	
4/7/2005	Soil	WC-2	X	X	
4/7/2005	Soil	WC-3	X	X	
4/7/2005	Soil	TP-7(2')	X	X	
4/7/2005	Soil	TP-7(4')	X	X	
4/7/2005	Soil	TP-7(6')	X	X	
4/7/2005	Soil	TP-8(2')	X	X	
4/7/2005	Soil	TP-8(4')	X	X	
4/7/2005	Soil	TP-8(6')	X	X	
4/7/2005	Soil	TP-9(2')	X	X	
4/7/2005	Soil	TP-9(4')	X	X	
4/7/2005	Soil	TP-9(4') MS/MSD	X	X	
4/7/2005	Soil	TP-9(6')	X	X	
4/7/2005	Soil	SS-1	X	X	
4/7/2005	Soil	SS-2			X
4/7/2005	Soil	SS-3			X
4/7/2005	Soil	NS-1	X	X	
4/7/2005	Soil	NS-2	X	X	
4/7/2005	Soil	Waste Outfall 1			X
4/7/2005	Soil	DUP 1, collected at TP-8(2')	X	X	X
4/7/2005	Water	Trip Blank/Temp. Blank		X	

Notes:
TCL - Target Compound List
TAL - Target Analyte List
PCBs - polychlorinated biphenyl
VOCs - Volatile Organic Compounds
SVOCs - Semi-Volatile Organic Compounds

TABLE 2
SUPPLIMENTAL SOIL INVESTIGATION SAMPLING RESULTS

DRAFT

GEORGIA - PACIFIC CORPORATION
FORMER HAWTHORNE MILL PROPERTY
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
KALAMAZOO, MICHIGAN

Sample ID:		NS-1	NS-2	SS-1	SS-2	SS-3	TP-7(2')	TP-7(4')	TP-7(6')	TP-8(2')	TP-8(4')	TP-8(6')	TP-9(2')	TP-9(4')	TP-9(6')	WASTE OUTFALL-1	WC-1	WC-2	WC-3
Sample Depth (feet):							2	4	6	2	4	6	2	4	6		2.1	3	3.7
Date Collected:	Units	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05
VOCs																			
1,2,3-Trichlorobenzene	ug/kg	R	9.8 UJ	R	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	R	4.7 U	4.4 UJ	NA	8.7 U	150 U	150 U
1,2,4-Trichlorobenzene	ug/kg	R	9.8 UJ	R	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	R	4.7 U	4.4 UJ	NA	5.2 J	150 U	150 U
1,2,4-Trimethylbenzene	ug/kg	R	9.8 UJ	10 UJ	NA	NA	3.8 U	7.5 U	6.7 UJ	4.6 U	3.9 U	6 U	5.5 UJ	1.8 J	4.4 U	NA	8.7 UJ	8 UJ	7 UJ
2-Butanone	ug/kg	56J	27J	33J	NA	NA	R	R	43J	9.2 J	12 J	42 J	19 J	10 J	13 J	NA	81 J	96 J	58 J
2-Hexanone	ug/kg	9 UJ	9.8 UJ	10 UJ	NA	NA	3.8 U	7.5 U	6.7 UJ	4.6 U	3.9 U	6 U	5.5 U	4.7 U	4.4 U	NA	7.1 J	11	7 U
4-Isopropyltoluene	ug/kg	R	9.8 UJ	3.1 J	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	R	4.7 U	4.4 UJ	NA	8.7 UJ	150 U	150U
Acetone	ug/kg	740 EJ	340J	340J	NA	NA	31J	35J	340 EJ	86 J	110 J	390 EJ	500 EJ	63 J	110 J	NA	2300 DJ	1300 DJ	1800 DJ
Benzene	ug/kg	9 UJ	9.8 UJ	10 UJ	NA	NA	0.87 J	7.5 U	6.7 UJ	1.3 J	0.95 J	1.2 J	5.5 U	4 J	1.9 J	NA	8.7 U	8 U	7 U
Bromomethane	ug/kg	9 UJ	9.8 UJ	10 UJ	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	5.5 UJ	4.7 UJ	4.4 UJ	NA	8.7 UJ	18 J	2.8 J
Carbon Disulfide	ug/kg	9 UJ	9.8 UJ	10 UJ	NA	NA	0.79 J	6.9 J	6.7 UJ	2 J	4.2	6 U	4.5 J	7	3.1 J	NA	3.2 J	1.8 J	5.3 J
Chloromethane	ug/kg	9UJ	9.8UJ	10 UJ	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	5.5 UJ	4.7 UJ	4.4 UJ	NA	8.7 UJ	4.0 J	7 .0 UJ
Ethylbenzene	ug/kg	R	9.8 UJ	10 UJ	NA	NA	3.8 U	7.5 U	6.7 UJ	4.6 U	3.9 U	6 U	5.5 UJ	1.8 J	4.4 U	NA	8.7 UJ	8 UJ	7 UJ
Hexachlorobutadiene	ug/kg	R	9.8 UJ	R	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	R	4.7 U	4.4 UJ	NA	3.6 J	150 U	150 U
Methyl Iodide	ug/kg	9 UJ	9.8 UJ	10 UJ	NA	NA	3.8 U	7.5 U	2.4 J	4.6 U	3.9 U	6 U	5.5 U	4.7 U	4.4 U	NA	8.7 U	8.6	7 U
n-Butylbenzene	ug/kg	R	9.8 UJ	R	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	R	4.7 U	4.4 UJ	NA	2.4 J	150 U	150 U
Naphthalene	ug/kg	R	9.8 UJ	R	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	R	4.7 U	4.4 UJ	NA	9.8 J	150 U	150 U
sec-Butylbenzene	ug/kg	R	9.8 UJ	10 UJ	NA	NA	3.8 U	7.5 U	6.7 UJ	4.6 U	3.9 U	6 U	5.5 UJ	4.7 U	4.4 J	NA	8.7 UJ	8 UJ	7 UJ
Styrene	ug/kg	R	9.8 UJ	10 UJ	NA	NA	1.2 J	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	5.5 UJ	4.7 UJ	4.4 U	NA	8.7 UJ	8 UJ	7 U
Toluene	ug/kg	16J	3.7 J	6.6 J	NA	NA	2.1 J	2.6 J	2.8 J	2.7 J	2.5 J	4.1 J	4.9 J	8.3 J	2.8 J	NA	6.8 J	5.2 J	4.2 J
Trichloroethene	ug/kg	9 UJ	9.8 UJ	10 UJ	NA	NA	3.8 U	7.5 U	6.7 UJ	10	17	11	5.5 U	4.7 U	4.4 U	NA	8.7 U	8 U	7 U
Xylene (m,p)	ug/kg	R	9.8 UJ	10 UJ	NA	NA	3.8 U	7.5 U	6.7 U	4.6 U	3.9 U	6 U	5.5 UJ	2.5 J	4.4 U	NA	8.7 UJ	8 UJ	7 UJ
Xylene (o)	ug/kg	R	9.8 UJ	10 UJ	NA	NA	3.8 UJ	7.5 UJ	6.7 UJ	4.6 UJ	3.9 UJ	6 UJ	5.5 UJ	1.1 J	4.4 U	NA	8.7 UJ	8 UJ	7 UJ
SVOCs																			
2,4,5-Trichlorophenol	ug/kg	1300 U	1200 U	1700 U	NA	NA	900 U	1100 U	1300 U	960 U	910 U	1400 U	1000 U	1100 U	1000 U	NA	1500 U	1400 U	190 J
2-Methylnaphthalene	ug/kg	1300	170 J	690 UJ	NA	NA	62 J	150 J	510 UJ	75 J	48 J	540 UJ	120 J	430 UJ	26 J	NA	42 J	28 J	34 J
4-Methylphenol	ug/kg	520 U	460 U	690 U	NA	NA	360 U	450 U	510 U	380 U	360 U	540 U	410 U	430 U	420 U	NA	590 U	26 J	550 U
Acenaphthene	ug/kg	520 U	460 U	690 U	NA	NA	20 J	450 U	510 U	380 U	360 U	540 U	410 U	430 U	45 J	NA	590 U	560 U	550 U
Acenaphthylene	ug/kg	520 U	460 U	690 U	NA	NA	360 U	450 U	510 U	20 J	360 U	540 U	410 U	430 U	420 U	NA	590 U	560 U	550 U
Anthracene	ug/kg	61 J	460 U	690 U	NA	NA	47 J	450 U	510 U	35 J	43 J	540 U	45 J	430 U	100 J	NA	590 U	560 U	550 U
Benzo(a)anthracene	ug/kg	260 J	47 J	110 J	NA	NA	220 J	29 J	510 U	560	450	540 U	180 J	430 U	200 J	NA	590 U	48 J	550 U
Benzo(a)pyrene	ug/kg	190 J	40 J	130 J	NA	NA	220 J	21 J	510 U	490	400	540 U	150 J	430 U	160 J	NA	590 UJ	560 U	550 U
Benzo(b)fluoranthene	ug/kg	250 J	50 J	110 J	NA	NA	200 J	26 J	510 U	440	440	540 U	160 J	430 U	170 J	NA	590 UJ	560 U	550 U
Benzo(g,h,i)perylene	ug/kg	130 J	45 J	120 J	NA	NA	200 J	450 UJ	510 UJ	180 J	190 J	540 UJ	110 J	430 UJ	150 J	NA	590 UJ	560 UJ	550 UJ
Benzo(k)fluoranthene	ug/kg	260 J	43 J	140 J	NA	NA	270 J	450 U	510 U	490	390	540 U	160 J	430 U	170 J	NA	590 UJ	560 U	550 U
bis(2-Ethylhexyl)phthalate	ug/kg	120 J	460 U	690 U	NA	NA	360 U	450 U	510 U	380 U	360 U	540 U	220 J	430 U	420 U	NA	590 UJ	560 U	550 U
Butylbenzylphthalate	ug/kg	33 J	460 U	690 U	NA	NA	360 U	35 J	510 U	380 U	180 J	540 U	410 U	430 U	420 U	NA	590 U	560 U	550 U
Carbazole	ug/kg	53 J	460 U	690 U	NA	NA	32 J	450 U	510 U	380 U	26 J	540 U	30 J	430 U	90 J	NA	590 U	560 U	550 U
Chrysene	ug/kg	390 J	62 J	150 J	NA	NA	240 J	43 J	510 U	550	490	540 U	220 J	430 U	220 J	NA	61 J	68 J	550 U
Di-n-butylphthalate	ug/kg	27 J	460 U	690 U	NA	NA	360 U	450 U	510 U	380 U	360 U	540 U	410 U	430 U	420 U	NA	590 U	560 U	550 U
Dibenz(a,h)anthracene	ug/kg	33 J	460 U	690 U	NA	NA	49 J	450 U	510 U	69 J	64 J	540 U	32 J	430 U	40 J	NA	590 UJ	560 U	550 UJ
Dibenzofuran	ug/kg	250 J	34 J	690 U	NA	NA	24 J	32 J	510 U	21 J	18 J	540 U	39 J	430 U	33 J	NA	590 U	560 U	550 U
Fluoranthene	ug/kg	550	100 J	220 J	NA	NA	560	53 J	510 U	850	850	540 U	420	430 U	660	NA	44 J	64 J	70 J
Fluorene	ug/kg	520 U	460 U	690 U	NA	NA	18 J	450 U	510 U	380 U	360 U	540 U	410 U	430 U	53 J	NA	590 U	560 U	550 U
Indeno(1,2,3-cd)pyrene	ug/kg	79 J	28 J	88 J	NA	NA	150 J	450 U	510 U	180 J	170 J	540 U	88 J	430 U	110 J	NA	590 UJ	560 U	550 UJ
Naphthalene	ug/kg	580	80 J	690 U	NA	NA	37 J	80 J	510 U	56 J	40 J	540 U	52 J	430 U	58 J	NA	590 U	560 U	550 U
Pentachlorophenol	ug/kg	1300 U	1200 U	1700 U	NA	NA	900 U	1100 U	1300 U	960 U	910 U	1400 U	1000 U	1100 U	1000 U	NA	60 J	1400 U	340 J
Phenanthrene	ug/kg	810	120 J	96 J	NA	NA	280 J	82 J	510 U	160 J	210 J	540 U	320 J	430 U	530	NA	31 J	41 J	37 J
Pyrene	ug/kg	520	91 J	220 J	NA	NA	490	45 J	510 U	1100	970	540 U	380 J	430 U	470	NA	99 J	81 J	130 J
PCBs																			
Aroclor 1248	ug/kg	78 U	70 U	100 U	50 U	50 U	54 U	68 U	77 U	57 U	55 U	82 U	62 U	65 U	63 U	86 U	110	83 U	810
Aroclor 1254	ug/kg	220	70 U	100 U	50 U	50 U	54 U	57 J	77 U	57 U	55 U	82 U	62 U	65 U	63 U	610	170	76 J	300
Aroclor 1260	ug/kg	58 J	70 U	100 U	50 U	50 U	54 U	68 U	77 U	57 U	55 U	82 U	62 U	65 U	63 U	210	46 J	46 J	170
Total PCBs	ug/kg	278 J	ND	ND	ND	ND	ND	57 J	ND	ND	ND	ND	ND	ND	ND	820	326 J	122 J	1280

TABLE 2
SUPPLIMENTAL SOIL INVESTIGATION SAMPLING RESULTS

DRAFT

GEORGIA - PACIFIC CORPORATION
FORMER HAWTHORNE MILL PROPERTY
ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
KALAMAZOO, MICHIGAN

Sample ID:		NS-1	NS-2	SS-1	SS-2	SS-3	TP-7(2')	TP-7(4')	TP-7(6')	TP-8(2')	TP-8(4')	TP-8(6')	TP-9(2')	TP-9(4')	TP-9(6')	WASTE OUTFALL-1	WC-1	WC-2	WC-3
Sample Depth (feet):							2	4	6	2	4	6	2	4	6		2.1	3	3.7
Date Collected:	Units	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05	04/07/05
Pesticides																			
4,4'-DDD	ug/kg	8.2 J	4.7 U	7 U	NA	NA	3.6 U	4.6 U	5.1 U	3.8 U	3.7 U	5.5 U	4.2 U	4.3 U	4.2 U	NA	9.8	5.6 U	11
4,4'-DDE	ug/kg	11	4.7 U	7 U	NA	NA	3.6 U	4.6 U	5.1 U	3.8 U	3.7 U	5.5 U	4.2 U	4.3 U	4.2 U	NA	42 J	37	18 J
4,4'-DDT	ug/kg	31	4.7 U	7 U	NA	NA	3.6 U	4.6 U	5.1 U	3.8 U	3.7 U	5.5 U	4.2 U	4.3 U	4.2 U	NA	6 U	5.6 U	5.5 U
Aldrin	ug/kg	2.6 U	2.3 U	3.5 U	NA	NA	1.8 U	2.3 U	2.6 U	1.9 U	1.8 U	2.7 U	2.1 U	2.2 U	2.1 U	NA	3 U	2.8 U	12 JN
alpha-Chlordane	ug/kg	2.6 U	2.3 U	3.5 U	NA	NA	1.8 U	2.3 U	2.6 U	1.9 U	1.8 U	2.7 U	2.1 U	2.2 U	2.1 U	NA	4.1 J	2.8 U	4.3 J
delta-BHC	ug/kg	2.6 U	2.3 U	3.5 U	NA	NA	1.8 U	2.3 U	2.6 U	1.9 U	1.8 U	2.7 U	2.1 U	2.2 U	2.1 U	NA	3 U	2.8 U	23
Dieldrin	ug/kg	5.2 U	4.7 U	7 U	NA	NA	3.6 U	4.6 U	5.1 U	3.8 U	3.7 U	5.5 U	4.2 U	4.3 U	4.2 U	NA	18 J	6	5.5 U
Endrin ketone	ug/kg	5.2 U	4.7 U	7 U	NA	NA	3.6 U	4.6 U	5.1 U	3.8 U	3.7 U	5.5 U	4.2 U	4.3 U	4.2 U	NA	6 U	5.6 U	6.6
gamma-Chlordane	ug/kg	2.6 U	2.3 U	3.5 U	NA	NA	1.8 U	2.3 U	2.6 U	1.9 U	1.8 U	2.7 U	2.1 U	2.2 U	2.1 U	NA	10 JN	4.4 J	2.8 U
Heptachlor	ug/kg	2.6 U	2.3 U	3.5 U	NA	NA	1.8 U	2.3 U	2.6 U	1.9 U	1.8 U	2.7 U	2.1 U	2.2 U	2.1 U	NA	5.7 J	2.8 U	2.8 U
Heptachlor epoxide	ug/kg	2.6 U	2.3 U	3.5 U	NA	NA	1.8 U	2.3 U	2.6 U	1.9 U	1.8 U	2.7 U	2.1 U	2.2 U	2.1 U	NA	12	2.8 U	18 J
Metals and Cyanide																			
Aluminum	mg/kg	4900J	2170J	9020J	NA	NA	4450J	2430J	8360J	5030J	9740J	10400J	6200J	1990J	2530J	NA	21600J	17200J	20900J
Antimony	mg/kg	3.5 B	0.89 B	1.2 B	NA	NA	0.36 U	0.53 B	0.61 U	0.44 U	0.61 B	0.67 U	0.68 B	0.4 U	0.45 U	NA	0.72 U	1.9 B	0.68 U
Arsenic	mg/kg	27.9J	23.1J	44.3J	NA	NA	8.2J	12.3J	69.1J	14.3J	6J	33.4J	14J	6.6J	7.3 J	NA	4.1 J	3.6 J	4 J
Barium	mg/kg	354	82.5	198	NA	NA	48.4	93.7	172	55	99.3	187	142	31.8	85	NA	43.1	47.4	30.1 B
Beryllium	mg/kg	2.8	0.88	1.1	NA	NA	0.47	1.5	0.83	0.46 B	0.91	0.8 B	1.4	0.31 B	0.28 B	NA	0.39 B	0.46 B	0.47 B
Cadmium	mg/kg	1.1	0.3 B	1.1	NA	NA	0.3 B	0.18 B	1.2	0.22 B	0.37 B	1.1	0.87	0.1 B	0.25 B	NA	0.66 B	0.59 B	0.25 B
Calcium	mg/kg	5250	4180	10700	NA	NA	7800	9460	6990	21900	39300	42900	25500	61600	106000	NA	3550	40100	7060
Chromium	mg/kg	21.9	6.1	18.7	NA	NA	8.1	5.9	17.7	8.9	12.8	19.6	17.8	4.7	8.2	NA	43.1	18.7	14.2
Cobalt	mg/kg	11.8	4 B	6.2 B	NA	NA	4.1 B	3.2 B	12.1	4.3 B	5.2	8.4	7.6	2.2 B	3 B	NA	1.7 B	1.7 B	1 B
Copper	mg/kg	72.5	35.2	40.3		NA	11.1	17.3	8	11.3	13.1	8.4	44.5	2.4 B	8.8	NA	354	343	284
Iron	mg/kg	13900	5370	45200	NA	NA	13600	11900	95200	16500	30600	56000	21900	6660	11800	NA	3780	3050	3050
Lead	mg/kg	543J	54.5J	101J	NA	NA	11.5J	9.5J	8.6J	102J	51.7J	10.5J	50.4J	2.5J	20.9J	NA	47.1J	55.9J	24.7J
Magnesium	mg/kg	817	368 B	2370	NA	NA	2300	767	2160	4330	7460	5600	2520	5580	5140	NA	916	3530	596 B
Manganese	mg/kg	211	56.3	434	NA	NA	277	157	2510	254	371	1850	714	244	659	NA	50.9	63.2	23.2
Mercury	mg/kg	0.13	0.094	0.29	NA	NA	0.024 B	0.25	0.1	0.079	0.1	0.3	0.68	0.019 U	0.052	NA	25.8	48.4	3.2
Nickel	mg/kg	23.8	9.4	12.6	NA	NA	8.5	7.1	11	7.8	8.7	13.4	15.1	3.5 B	4.5	NA	11.2	9.1	5.2 B
Potassium	mg/kg	456 B	183 B	658 B	NA	NA	443 B	481 B	414 B	511 B	1130	474 B	668	184 B	212 B	NA	135 B	115 B	80 B
Selenium	mg/kg	2.1	1.2	2.2	NA	NA	0.37 U	0.79	0.9	0.67	0.38 U	2.5	1.9	0.37 U	0.52 B	NA	0.73 U	0.68 U	0.7 U
Sodium	mg/kg	101 B	106 B	96.6 U	NA	NA	43.4 U	63.9 B	72.4 U	52.8 U	319 B	79.7 U	155 B	57.5 B	149 B	NA	146 B	127 B	81 U
Thallium	mg/kg	1.3 U	1.1 U	1.7 U	NA	NA	0.75 U	1 U	1.4 B	0.92 U	0.77 U	1.4 U	1 U	0.83 U	0.92 U	NA	1.5 U	1.4 U	1.4 U
Vanadium	mg/kg	34.9	10	26.7	NA	NA	14.2	13.4	31.4	19.3	21.8	29	21.2	10.2	9.5	NA	19.4	15.1	21.8
Zinc	mg/kg	211	81.8	152	NA	NA	38.2	19.4	65.2	41.8	46.7	70.2	178	9.1	43.1	NA	213	222	190
Miscellaneous																			
Solids, Percent	%	64.3	71.1	47.7	NA	NA	92.3	73.1	64.9	87.2	90.7	61.3	80.5	76.7	78.6	57.7	55.6	59.5	60.3

Notes:
TCL - Target Organic Compounds
TAL - Target Analyte List
PCBs - Polychlorinated biephenyl
VOCs - Volatile Organic Compounds
SVOCs - Semi-Volatile Organic Compounds
ND - Non-detect
NA - Not Analyzed - Laboratory did not report results for this analyte.
B - Indicates an estimated value between the instrument detection limit (IDL) and practical quantitation limit (PQL).
D - Compound quantitated using secondary dilution.
E - Analyte exceeded calibration range.
J - Indicates an estimated value less than the practical quantitation limit (PQL).
JN - Analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
R - Sample results are rejected. Due to significant QC problems, the analysis is invalid and provides no information as to whether te compound is present or not.
U - Analyte was not detected. The number in paranthesese is the associated detection limit.
ug/kg - micrograms per kilogram
mg/kg - millograms per killogram
Indicates that a particular analyte was detected.

Figure

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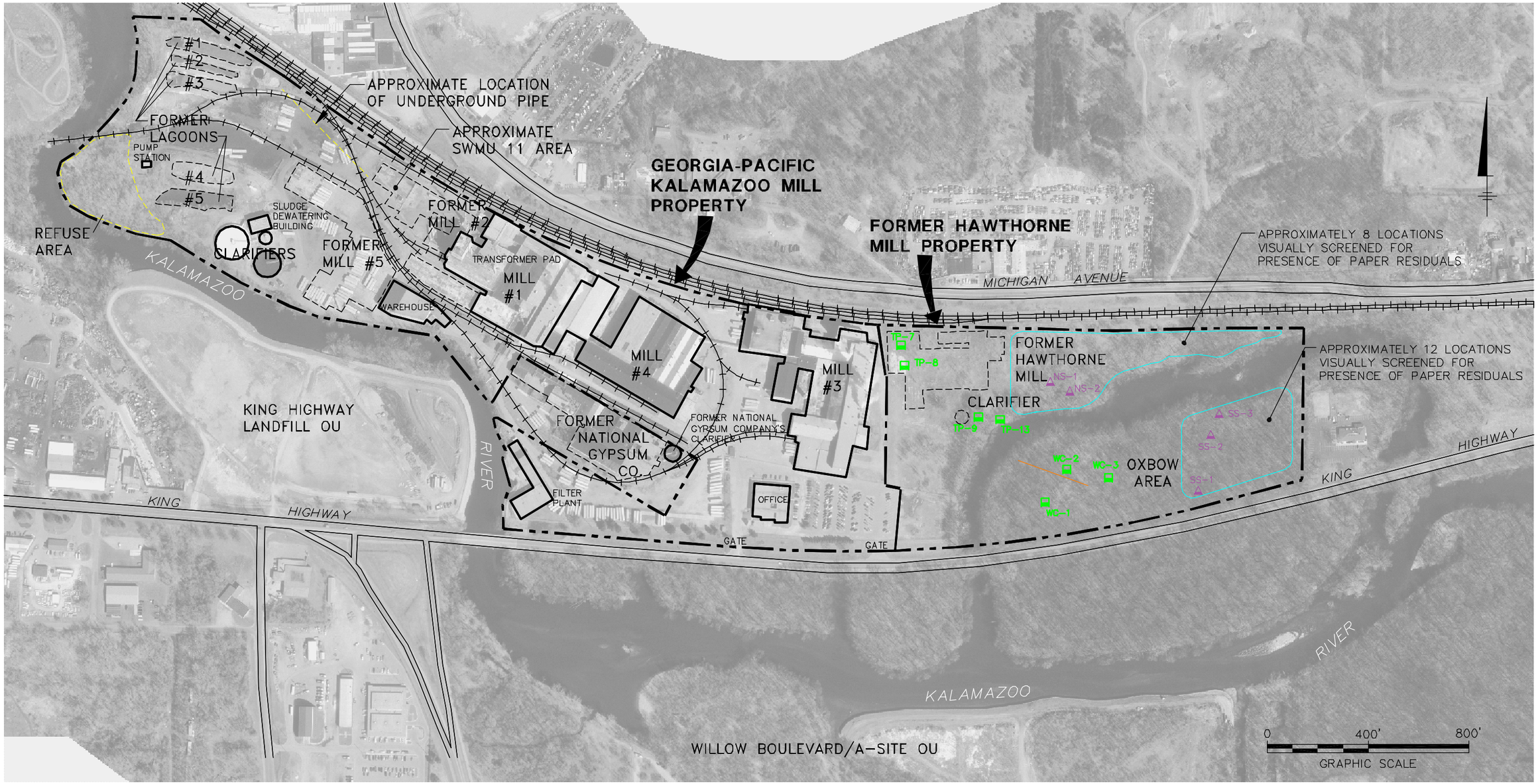

NOTES:

1. PLANIMETRIC MAPPING, INCLUDING PROPERTY BOUNDARIES, IS APPROXIMATE.
2. AERIAL IMAGE DERIVED FROM ORTHOPHOTOGRAPHIC DATA BY AIR LAND SURVEYS, INC., FLOWN 4/24/99.
3. TEST PIT LOCATIONS ARE APPROXIMATE.

LEGEND:

- APPROXIMATE EXTENT OF THE REFUSE AREA
- APPROXIMATE BOUNDARY OF KALAMAZOO MILL AND HAWTHORNE MILL PROPERTIES
- APPROXIMATE BOUNDARY OF FORMER LAGOONS AND MILLS
- APPROXIMATE BOUNDARY OF HAWTHORNE MILL PROPERTY SOIL INVESTIGATION
- APPROXIMATE LOCATION OF LIKELY FORMER WASTE OUTFALL
- APPROXIMATE LOCATION OF TEST PIT
- APPROXIMATE LOCATION OF SURFACE SOIL SAMPLE

X: 64585X01.DWG, 64585X02.TIF, 64585X03.TIF
L: ON=* OFF=*REF
P: PAGESET/SYR-BL
6/30/05 SYR-BS-RLP TJR KLS
64585157/64585G04.DWG

GEORGIA-PACIFIC CORPORATION
FORMER HAWTHORNE MILL PROPERTY
SUPPLEMENTAL SOIL INVESTIGATION ACTIVITIES SUMMARY MEMORANDUM

SAMPLING LOCATIONS

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FIGURE
1

Attachment A

Test Pit Log

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Date Start/Finish: 4/7/2005
Excavating Company: Terra Contracting
Operator's Name: Doug
Backhoe: Komatsu 600PC

Northing: NA
Easting: NA
Surface Elevation: NA
Test Pit Depth: 6.0' bgs
Field Person(s): Kristina Gross

Test Pit No. TP-7
Client: Georgia-Pacific
Location: Georgia-Pacific
Former Hawthorne Mill Property
Kalamazoo, Michigan

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Engineer's/Geologist's Notes
0 / 0						CONCRETE (former building slab).	TP-7 is located 85' north of gate entrance, 79' east of fence, and 84' northwest of TP-8. See photos 1-14 through 2-4 for TP-7.
						Brown fine SAND, little Silt and Organics (Roots), dry, loose.	
						Black fine to medium SAND, little Cinders, Ash, and Slag, dry, loose.	
			0.0	X		Orangish-brown fine SAND, moist, loose.	
						Black fine to medium SAND, some Cinders, trace Slag, interbedded with red Brick and Mortar, dry, friable.	
			0.4	X			
5 / -5						Dark gray SILT, light brownish-orange mottling, moist, stiff.	
			0.1	X			
10 / -10							
15 / -15							

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Remarks: NA = Not Applicable/Not Available; bgs = below ground surface.

Soil samples TP-7(2'), TP-7(4'), and TP-7(6') collected for TCL/TAL Metals, PCBs, Pesticides, SVOCs, and VOCs.

Date Start/Finish: 4/7/2005
Excavating Company: Terra Contracting
Operator's Name: Doug
Backhoe: Komatsu 600PC

Northing: NA
Easting: NA
Surface Elevation: NA
Test Pit Depth: 6.0' bgs
Field Person(s): Kristina Gross

Test Pit No. TP-8
Client: Georgia-Pacific
Location: Georgia-Pacific
Former Hawthorne Mill Property
Kalamazoo, Michigan

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Engineer's/Geologist's Notes
0 / 0						CONCRETE (former building slab).	TP-8 located 80' north of gate entrance and 107' east of fence.
						Black fine SAND, little Silt, red Brick, Slag, and Cinders, dry, loose.	See photos 1-10 through 1-13 for TP-8.
			0.3	X		Orangish-brown fine SAND, little well rounded fine to medium Gravel, moist, loose.	
			0.0	X		Black fine to medium SAND, little fine to medium subangular to subrounded Gravel and Slag, Cinders, moist, loose.	
5 / -5						Red BRICK.	
			0.0	X		CONCRETE pads at 5.2' bgs. Appear to be likely foundation for 2' x 4' concrete blocks. Between Concrete footers, dark gray SILT, light brownish-orange mottling, moist, stiff.	
10 / -10							
15 / -15							

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Remarks: NA = Not Applicable/Not Available; bgs = below ground surface.

Soil samples TP-8(2'), TP-8(4'), and TP-8(6') collected for TCL/TAL Metals, PCBs, Pesticides, SVOCs, and VOCs. DUP 1 collected at this location.

Date Start/Finish: 4/7/2005
Excavating Company: Terra Contracting
Operator's Name: Doug
Backhoe:

Northing: NA
Easting: NA
Surface Elevation: NA
Test Pit Depth: 6.0' bgs
Field Person(s): Kristina Gross

Test Pit No. TP-9
Client: Georgia-Pacific
Location: Georgia-Pacific
Former Hawthorne Mill Property
Kalamazoo, Michigan

DRAFT

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Engineer's/Geologist's Notes
0 0						Surface littered with Organic Debris (Leaves, Branches). Black SILT and fine SAND, some Organics (Roots), dry, loose.	TP-9 located 38' east of former clarifier foundation.
			0.8	X		Light brownish-orange fine SAND, loose, moist.	Test pit was excavated slightly east of former clarifies foundation to include a north/south running apparent drainage ditch (lined with 2' x 3' concrete blocks). Ditch appeared to be a surface feature only. Soils excavated under the ditch were similar to those on the east and west of the ditch.
			0.6				See photos 1-5 through 1-9 for TP-9.
				X		Light grayish-brown fine SAND with Organics (Shells), little medium to coarse well rounded Sand and fine to medium well rounded Gravel, moist becoming wet at 5.5' bgs, loose.	
5 -5			0.1	X			
10 -10							
15 -15							

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Remarks: NA = Not Applicable/Not Available; bgs = below ground surface.

Soil samples TP-9(2'), TP-9(4'), and TP-9(6') collected for TCL/TAL Metals, PCBs, Pesticides, SVOCs, and VOCs.

Date Start/Finish: 4/7/2005
Excavating Company: Terra Contracting
Operator's Name: Doug
Backhoe: Komatsu 600PC

Northing: NA
Easting: NA
Surface Elevation: NA
Test Pit Depth: 2.5' bgs
Field Person(s): Kristina Gross

Test Pit No. TP-13(1), TP-13(2), TP-13(3)

DRAFT

Client: Georgia-Pacific

Location: Georgia-Pacific
Former Hawthorne Mill Property
Kalamazoo, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Engineer's/Geologist's Notes
0 / 0						Surface littered with Organic Debris (Leaves, Branches). Brown SILT and fine SAND, some Organics (Roots), dry, loose.	TP-13(1) is located 31' northeast of TP-119, and 30' north of OPT-3. TP-13(2) is located 8' south of TP-13(1), and TP-13(3) is located 8' north of TP-13(1).
						Black fine SAND, some Cinders and Ash, dry, friable.	See photos 2-5 through 3-3 for TP-13 series.
						Light grayish-brown fine SAND with Organics (Seashells), moist, loose.	Lithology was similar at all three locations.
5 / -5							
10 / -10							
15 / -15							

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Remarks: NA = Not Applicable/Not Available; bgs = below ground surface.

No soil samples were collected at these locations.

Date Start/Finish: 4/7/2005
Excavating Company: Terra Contracting
Operator's Name: Doug
Backhoe: John Deer 502 TS

Northing: NA
Easting: NA
Surface Elevation: NA

Test Pit Depth: 2.1' bgs

Field Person(s): Kristina Gross

Test Pit No. WC-1

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Client: Georgia-Pacific

Location: Georgia-Pacific
Former Hawthorne Mill Property
Kalamazoo, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Engineer's/Geologist's Notes
0 0			1.2	X		Surface littered with Organic Debris (Leaves, Branches), and a thin veneer of Silt. Bluish-gray clay-like Material, dry, stiff.	WC-1 located 10.6' southwest of TP-44.
						Dark brown SILT, little Clay and fine Sand, dry, soft.	
						Light orangish-brown fine SAND, moist to wet, dry.	
5 -5							
10-10							
15-15							

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Remarks: NA = Not Applicable/Not Available; bgs = below ground surface.

Soil sample WC-1(1015) collected for TCL/TAL Metals, PCBs, Pesticides, SVOCs, and VOCs.

Date Start/Finish: 4/7/2005
Excavating Company: Terra Contracting
Operator's Name: Doug
Backhoe: John Deer 502 TS

Northing: NA
Easting: NA
Surface Elevation: NA

Test Pit Depth: 3.0' bgs

Field Person(s): Kristina Gross

Test Pit No. WC-2

Client: Georgia-Pacific

Location: Georgia-Pacific
Former Hawthorne Mill Property
Kalamazoo, Michigan

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DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Engineer's/Geologist's Notes
0 / 0			0.6	X		Surface littered with Organic Debris (Leaves, Branches), and a thin veneer of Silt. Bluish-gray clay-like Material, dry, stiff.	WC-2 located 5.4' north of TP-50, and 25' east of the apparent end of the likely former waste outfall pipe.
						Dark brown SILT, little Clay and fine Sand, dry, soft.	
						Light orangish-brown fine SAND, moist to wet, dry.	
5 / -5							
10 / -10							
15 / -15							

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Remarks: NA = Not Applicable/Not Available; bgs = below ground surface.

Soil sample WC-2(1040) collected for TCL/TAL Metals, PCBs, Pesticides, SVOCs, and VOCs.

Date Start/Finish: 4/7/2005
Excavating Company: Terra Contracting
Operator's Name: Doug
Backhoe: John Deer 502 TS

Northing: NA
Easting: NA
Surface Elevation: NA

Test Pit Depth: 3.7' bgs

Field Person(s): Kristina Gross

Test Pit No. WC-3

DRAFT

Client: Georgia-Pacific

Location: Georgia-Pacific
Former Hawthorne Mill Property
Kalamazoo, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Engineer's/Geologist's Notes
0 0			1.6	X		Surface littered with Organic Debris (Leaves, Branches), and a thin veneer of Silt. Bluish-gray clay-like Material, dry, stiff.	WC-3 located 53' northwest of TP-41, and 75' northeast of TP-42.
						Dark brown SILT, little Clay and fine Sand, dry, soft.	
						Light orangish-brown fine SAND, moist to wet, dry.	
5 -5							
10 -10							
15 -15							

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Remarks: NA = Not Applicable/Not Available; bgs = below ground surface.

Soil sample WC-3(1053) collected for TCL/TAL Metals, PCBs, Pesticides, SVOCs, and VOCs.

Attachment B

Test Pit Photo Log

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Approximate Waste Outfall 1 sample location

South sidewall of TP-9

Completed excavation of TP-9

Completed excavation of TP-9, north sidewall

West sidewall of TP-8, showing layer of slag and brick fill at approximately 0.5 ft to 1.7 ft bgs

Completed excavation of TP-8, west sidewall

Completed excavation of TP-8, east sidewall

South sidewall of TP-7, showing 6-inch steel pipe at approximately 3.5 feet bgs

Completed excavation of TP-7, south sidewall

Completed excavation of TP-7, north sidewall, showing slag and cinders from 2.1 feet bgs to 5.0 feet bgs, and silt from 5.0 feet bgs to 6.0 feet bgs

Completed Excavation of TP-13(1), south sidewall

Completed excavations TP-13(3), TP-13(1), and TP-13(2) – in order from foreground to background